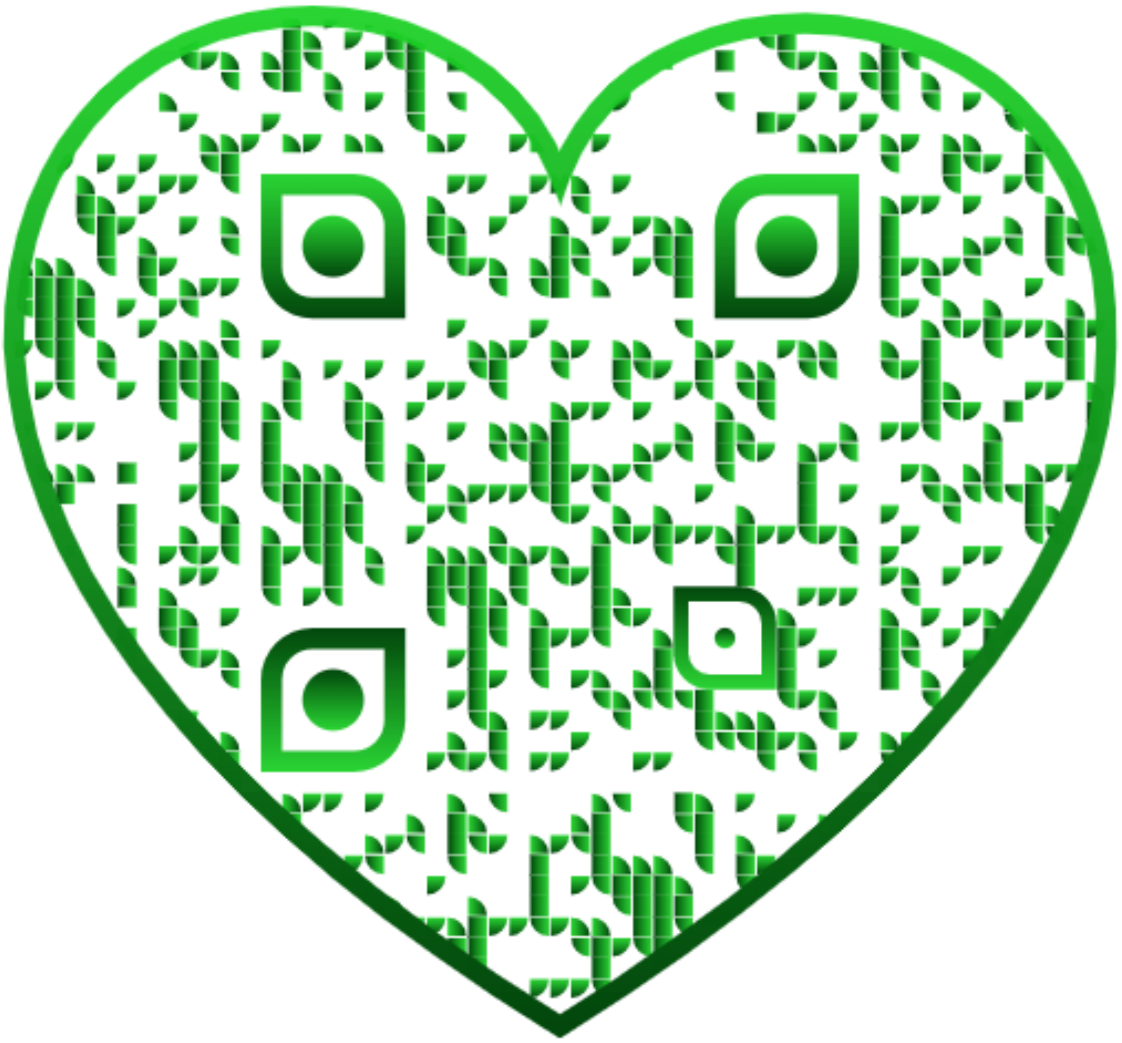
Pharmaceutical Quantification



Chapter Objectives

- At the end of this chapter the students will be able:
  - Define key terminologies in pharmaceutical quantification
  - Explain the importance of pharmaceutical quantification in SCM
  - Identify the key steps or phases in pharmaceutical quantification
  - State activities for initiating, reviewing and updating quantification
  - Compare and contrast the different methods of quantification
  - Conduct pharmaceutical quantification using different methods
  - Reconcile pharmaceutical demand with budget

Quantification of Drug Requirements

- **Quantification;**
  - It is the **process** used to determine **how much** a product is required for purpose of purchasing (procurement)
  - It is the 1st step in procurement process
  - It estimates the required **finance**
  - Often used interchangeably with **forecasting**
  - Quantification is not a one time-time,
    - It is an iterative process which includes reviews and updates required year bound
  - Quantification includes forecasting and supply planning.

Quantification…

- **Forecasting:**
  - It is the process of estimating the quantities of products that will actually be dispensed or used to meet the health needs of the targeted population during a specific future period of time
- To estimate needs, there should be analysis of contextual factors such as;
  - Available **funds**
  - **Storage** space capacity
  - **Human** resource

Indicators of poor quantification

- Shortage of drugs
- Overstocking of drugs
- Irrational prescribing
- Inefficient budget use
- Suppression or distortion of demand

Importance of quantification in supply chain management

- Quantification is important for informing supply chain decisions on product selection, financing, procurement, and delivery.
- The results of a quantification exercise help program manager to:
  - Identify the funding needs and gaps for procurement of the required commodities
  - Leverage the sources, amounts, and timing of funding commitments to maximize the use of available resources
  - Advocate for additional resources, when needed
  - Develop a supply plan to coordinate procurements and shipment delivery schedules to ensure a continuous supply of pharmaceuticals.

Key steps in quantification

- Quantification exercise follows three key steps:
  - Preparation,
  - Forecasting, and
  - Supply planning
- **Preparation phase:**
  - It involves the following activities:
    - Assembling quantification team,
    - Describing the program/setting for quantification
    - Defining the purpose and scope of the quantification exercise (products, timing, etc.) and
    - Collecting required data (for forecasting and supply planning)

Key steps in quantification….

- **Forecasting phase:**
  - Involves using the data collected during the preparation step to estimate the quantity of each product that will be dispensed or used during each year of the quantification
  - Forecasts can be prepared based on:
    - Historical consumption (quantities dispensed or used)
    - Services, morbidity and/or demographic data, and
    - Assumptions about future demand, program plans, and performance

Key steps in quantification….

- The forecasting step in a quantification exercise is a four-part process:
  - Organize, analyze, and adjust data (demographic, morbidity, service, consumption)
  - Build and obtain consensus on the forecasting assumptions
  - Calculate the forecasted consumption for each product
  - Compare and reconcile results of different forecasts

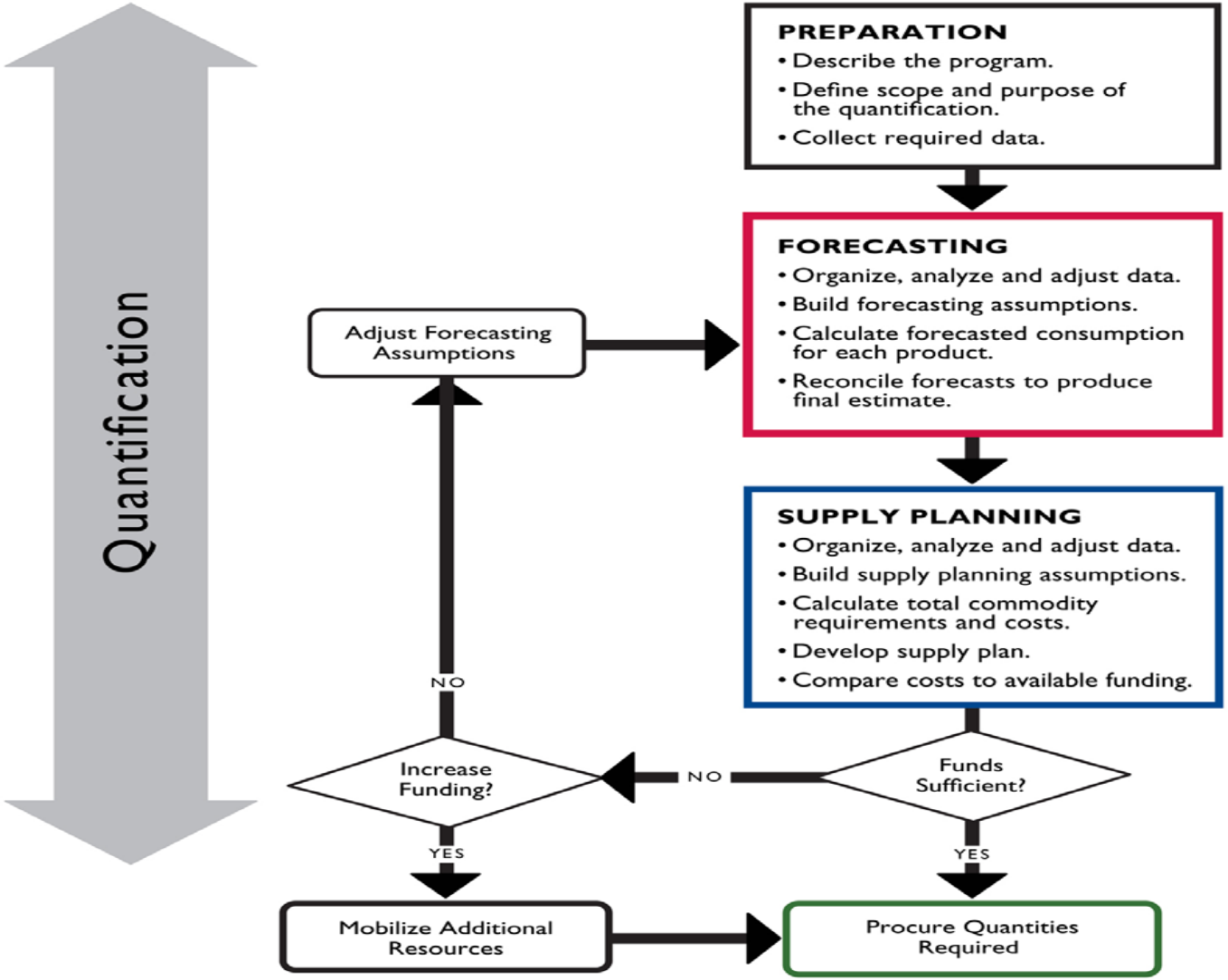
Key steps in quantification….

- **Supply planning phase**:
  - It is used to estimate the total commodity requirements and costs for a program or facility
  - The supply planning process includes;
    - Organize and analyze data (data for the supply planning step are different from the data for the forecasting step but can be collected at the same time.
    - Build supply planning assumptions

Key steps in quantification….

- Estimate total commodity requirements
  - First additional quantities of product needed
    - To cover procurement and supplier lead times, and
    - To maintain stock levels between the minimum and maximum
  - Stock on hand, stock on order should be subtracted and quantity of products that will expire before use should be added
  - Costs per procurement unit plus freight, customs, and other shipping fees will give total cost
- Develop supply plan (shipping quantities and delivery schedules)
- Compare costs to available funding

Figure 4.1: steps in quantification



Critical issues in any large scale quantification

- Preparing an action plan for quantification
- Using centralized or decentralized quantification
- Using manual or computerized methods of quantification
- Estimating the time required for quantification
- Developing the drug list
- Filling the supply pipeline
- Consider the impact of lead time
- Adjusting for losses due to wastage and theft and for program growth
- Cross-checking estimates produced by quantification
- Estimating total procurement cost
- Adjusting and reconciling final quantities

Who Should Conduct Quantification?

- For a quantification exercise to be useful and effective, the right people need to be involved in each step of the process, from data collection and analysis to presenting the final results
- People that most often involved in a quantification includes;
  - Logistics managers
  - Policymakers
  - Program managers
  - Technical experts
  - Procurement officers
  - Warehouse managers, and
  - Service providers

Purpose of the Quantification

- Examples of the purpose of a quantification include the following:
  - Provide data on specific commodity requirements and costs for the government's annual budget allocations
  - Inform donors about funding requirements and advocate for resource mobilization for commodity procurement.
  - Estimate commodity needs and assess stock status of the in-country supply pipeline to identify and correct supply imbalances
  - Support an estimate of commodity procurement, storage, and distribution costs

Methods of quantifications

- Selection of the appropriate quantification method requires considering:
  - Advantages and disadvantages of each methods
  - The conditions under which each method can be applied
  - The sets of data required for each method to be applied
  - The organization of the drug supply system
  - Additional purposes for which quantification results are to be applied

Methods of quantifications…

- There are four basic methods used for estimating Pharmaceutical quantities ;
  - Consumption method
  - Morbidity method
    - Patient morbidity standard treatment method
  - Proxy consumption method
  - Service level projection of budget requirements

1. Consumption Method

- Uses **records of past consumption** of individual medicines (adjusted for stock out & projected changes in medicine use) to project future need
- Commonly used to forecast for essential health products that are stable in terms of utilization
- It can be used under the following conditions:
  - Adequate fund
  - Acceptable pattern of prescribing
  - Adequate and uninterrupted drug supply
  - Good stock management
  - Low level of wastages and loses

Consumption Method…

- Data sets needed for consumption methods:
  - Consumption data
  - Drug list
  - Pharmaceutical budget

Consumption Method…

- **Steps in quantification using consumption method**

  1. Prepare **list** of drugs to be quantified

  2. Determine the **period** of time to be reviewed for consumption

- **3. Enter** consumption data for each drug

  - Determine quantity or consumption of pharmaceuticals

  - The total quantity used during the review period in BUs

    – The number of the days in which the drug was out of stock

    – The lead time for the last procurement

    • average from last several procurements

Consumption Method…

- **Sources of data**:
  - **Stock records, distribution report** (central/regional /district distribution point)
  - **Invoices** from supplier, dispensing records
  - 4. Calculate average monthly consumption

    CA= CT/(RM - (DOS/30.5)…….equation 1

    Where;
  - **CA** =average monthly consumption, adjusted for stock out
  - **CT =** total consumption during the review period
  - **RM =** review period in months
  - **DOS =** No. of days an item was out of stock during the review period

Consumption Method…

5. Calculate projected average monthly consumption for expected changes in consumption pattern

$$CP = CA + (CA \times Au)$$

Where;

CP= Projected average monthly consumption

Au= Use adjustment

Consumption Method…

6. Calculate the safety stock needed for each drug

SS = CP X LT ……equation 2

Where;

- SS = safety stock
- CA = average monthly consumption, adjusted for stock out
- LT=average lead time
- 7. Calculate the **quantity of** each drug required in the next procurement period

QO= CP X(LT +PP)+SS -(Si+So)

Where ;

QO = quantity to order before adjustment for losses or program change

PP=procurement period

So= stock now on order in BU

Si= Stock in inventory

Consumption Method…

7. **Adjust** for **losses**

$$QA=Qo+(Qo \times Qa)$$

- **Qa=** Loss adjustment

8. **Compile** decentralized quantification (if applicable)

- Estimate **costs** for each drug and **total** costs
- **Compare** total cost with budget and make adjustment
  - Either obtain **more funds** or
  - **Reduce** the number of drugs/or quantities ordered

Consumption Method…

- **Option 2: Forecasting pharmaceutical requirement for future period**

1. Determine recorded consumption of each pharmaceuticals

   Recorded consumption = (opening stock + drug received)- (closing stock)

2. Adjust consumption for stock out

$$\text{Consumption adjusted for stock out} = \text{Recorded consumption} \times \frac{\text{period in calculation (in days or month ...)}}{\text{period in stock (in days or month ...)}}$$

- 3. Adjust for other reasons (If needed)
  - Service expansion, losses……..increment
  - If the recorded consumption includes avoidable wastages-decrement

Consumption Method…

- Step-4: Compile decentralized quantification (if applicable)
- Step-5: Convert quantities to order pack size
- Step-6: Estimate cost for each pharmaceutical and total costs
- Step-7: Compare total cost with budget and make adjustment

Consumption Method….

- **Example:** calculate the amount of **Ampicilline 250** mg capsule for the next **six month** (procurement period) based on the following data
  - CT=89,000 capsule
  - SI=81,000
  - So=58,000
  - LT=3 month
  - Dos= 34 days , Use adjustment for 6 month=5%
  - Loss for adjustment for six month= 10%

Consumption Method….

- **Answer!!**
- **CA= CT/(RM - (DOS/30.5) =** 89,000/(6 – (34/30.5))
  = 18,218
- **CP= CA + (CAxAu) =** 18,218 + (18,218 x 5%) = 19,129
  - **SS = CP X LT**= 19,129 x 3 = 57,387
  - **QO= CPX(LT +PP)+SS -(Si+So)** = 19,129 x (3 + 6)+ 57,387 – (81,000 + 58,000)
    = 90,548
  - **QA=QO+(QO x AL)** = 90,548 + (90,548 x 10%)=99,603

Consumption Method…

- QA=QO+(QO x AL)= **99,603 capsule**
- Converted into pack= 100 pack
  - Probable price 1 pack= 24.70USD
  - Value of proposed order (USD)=2,470

Exercise #2

- Based on the given data given below answer the following questions . Support (Show) your answers using the necessary calculations.
- **Given:**
  - Drug = DNS (5%Dextrose 0.9 Normal saline)
  - Total consumption in period= 1525
  - DOS= 32 days
  - Stock on hand= 0
  - Stock on order= 2,288
  - Consumption period (Review period)= 6 months
  - Lead time= 3 months

Exercise …

- Use adjustment =5%
- Loss adjustment= 10%
- Strength= 5%/0.9%
- BU=bottle (bag)
- Pack size =1
- Probable pack price (US$)= 1.35

Questions

A. Determine average monthly consumption(CA)
B. Calculate Projected average monthly consumption(Cp)
C. Determine buffer stock (SS)
D. Suggested quantity to order (QO)
E. Calculate the amount of DNS (1000 ml) to be ordered after adjusted for loss(QA)
F. Value of proposed order (US$)

Answer!!!

A. **CA= CT/(Rm-(Dos/30.5))=1525/(6/32/30.5)= *308***

B. **Cp= CA+(CA*Au)= 308+(308*0.05)=323**

C. **SS=CP*LT= 323*3= *969***

D. **QO= CP*(LT+PP)+SS-(SI+SO)= 323*(3+6)+969-(0+2288)= 1593**

E. **QA=QO+(QO*AL)= 1593+(1593*0.1)= *1752 packs***

F. **Probable pack price (USD)= QA*price/pk= 1752*1.35=*2365***

Advantages of consumption methods

- First choice for quantification, given reliable data
- Requires less detailed calculation
- Useful for facilities where health problems are numerous and drug treatment is complex
- Identifies stock management problems and encourages improvement
- No morbidity data and treatment schedule needed

Disadvantages of quantification methods

- Reliable consumption data may not be found
- Can perpetuate irrational use
- May not be helpful for reviewing prescribing/drug use
- Less appropriate if there have been long stock outs/ high drug wastages or loses
- Doesn't encourage good morbidity recording

2. Morbidity Method

- Morbidity refers to the number of cases of a particular disease in a region
- Estimates the need for specific medicines based on the **expected no of attendances**, the **incidence of common diseases** & **standard treatment patterns** for the disease considered.
- The number or patients who are treated for a specific disease condition together with the standard dose for one case of illness is utilized to forecast
- Relies on a system where **availability of reliable morbidity data** is consistent
- Two key assumptions :
  - Practitioners follow standard treatment guidelines and
  - Each disease has one main treatment

Morbidity Method…

- **Conditions:**
  - Available consumption data are incomplete or unreliable
  - Prescribing patterns are inappropriate and a systematic improvement is required
  - Budget is unlikely to be sufficient to meet estimated requirements
  - The health facilities or services concerned are new, or expanding or contracting rapidly, so that past consumption is not a reliable guide to future requirements

Morbidity Method…

- **Data sets needed:**
  - Drug list with pack size and price data
  - Complete patient morbidity profile
  - Standard drug treatment schedules
  - Pharmaceutical budget

Morbidity Method…

- **Steps in quantification using morbidity method**

  1. Specify the **list** of **problems**
  2. Establish the list of **medicines** to be **quantifie**

- 3. Establish **standard or average treatments**

QE = DCUXNDXLD

Where;

- **QE** = Quantity needed for **each treatment episode**
- **Tt episode**= a patient contact for which a standard course of drug treatment is required
- **DCU**=basic unit per dose
- **ND**=Number of doses per day
- **LD**=length of treatment per episode

Morbidity method…

- 4) Collect **morbidity** data for each health problems treated
  - – Estimate expected number of tt episodes

    CE= C+(C x AU)

    - **C**= Past total no of contacts
    - **CE=** expected number of tt episodes
- **Sources of information for Morbidity data;**
  - **Health Information system**
    - – Morbidity pattern and treatment episode
    - – Information is not usually available
  - **Special study in Sentinel facilities**
  - **Retrospective** review of records in selected facilities
    - accessible, complete and accurate
  - **Prospective** study in a sample of health facilities

Morbidity method….

- **Key issues in conducting studies**
  - Obtain **No. of contacts and No. of treatment** episodes
  - Include only pt contacts that **normally needs drug** tt
    - E.g. exclude well baby clinic
- Express the frequency of each health problem in terms of **common denominator**, such as 1000 inpatients or outpatient visits

Morbidity method….

- **Separate frequencies** must be developed for all **age** group specified in a **STG**
- If discrete type of **prescribers** (Doctors Vs Nurses) use different treatment regimen, the number of episodes must be compiled separately for each prescriber type
- The sample data should also specify the no. of patient contact per total population in the area served by the sample facilities.

Morbidity method…

- 5) Calculate the **No. of tt episodes** for each health problem

  ET=CE X F

  Where;

  - ET = number of treatment episodes
  - NC = expected total number of contacts in thousands
  - F = the frequency of health problem estimated per 1000 contacts

- 6) Estimate the quantity of dugs needed for **each health problem**

  QT=ET X QE X PT

  • QT=quantity of drugs needed

  • E T= number of treatment episodes

  • QE=quantity of drugs for each treatment episode in BU

  • PT=percentage of cases that are treated with that specific regimen

Morbidity method…

- **7) Combine** the estimates for each drug from the various health problems into a master procurement list
- **8) Adjust** quantities to cover other health problems, for filling the pipeline and current stock position, and for expected losses
- **9) Estimate** costs for each drug and total costs
- 10) Compare total costs with budget and make adjustment

Morbidity…

Morbidity-based calculations

Formula number	Objective of formula	Calculations
1	Quantity of medicines needed per treatment episode	$Q_E = D_{CU} \times N_D \times L_D$
2	Expected total number of contacts (in thousands)	$C_E = C + (C \times A_U)$
3	Expected treatment episodes	$E_T = C_E \times F$
4	Total quantity of medicines needed	$Q_T = E_T \times Q_E \times P_T$

Q_E = Quantity of each medicine needed for each treatment episode
D_{CU} = Basic units per dose
N_D = Number of doses per day
L_D = Length of treatment in days
C = Past total number of contacts
A_U = Utilization adjustment
C_E = Expected total number of contacts
F = Frequency of health problem (per thousand)
E_T = Expected treatment episodes
Q_T = Total quantity required
P_T = Percentage of cases expected to be treated

Morbidity….

- **Example:** Estimate the total quantity of medicines required for the treatment of **Otitis Media** based on the following information.
  - **Last** total No. of contacts (C)= 3,123,408
  - 5% expected **rate** of **increase**
  - **Frequency** of Otitis Media (per thousand) = (106 for <5, 29 for>5)

Morbidity method…

- **Treatment** for Otitis Media
  - **Under 5**
    - Cotrimoxazole suspension 5ml BID for 10 days
    - Paracetamol sol/n of 120mg/5ml, 1.5ml QID for 10 days
    - Pseudoephedrine syrup 2.5ml QID for 5 days
  - **Above 5**
    - Cotrimoxazole 800/160 mg tab BID for 10 days
    - Paracetamol 500 mg tab, 2 tab QID for 5 days
    - Pseudoephedrine 60 mg tab QID for 5 days
  - All patients of Otitis Media are expected to be **treated** by **cotrimoxazole** and paracetamol, whereas **80**% of patients also treated with **Pseudoephedrine**

Morbidity method…

- **Solution!!!**

  QE = DCUXNDXLD… quantity of each medicine required for each treatment episode

  – **Under 5**

  - Cotrimoxazole suspension= 5ml x 2 x 10=100 ml
  - Paracetamol 120mg/5ml=1.5ml x 4 x 10=60 ml
  - Pseudoephedrine syrup= 2.5ml x 4 x 5= 50 ml

  – **Above 5**

  - Cotrimoxazole 800/160 mg
    - 1 tab x 2 x 10 =20 tab
- Paracetamol 500 mg tab= 2 tab x 4 x 5 =40 tab
- Pseudoephedrine 60 mg tab= 1 x 4 x 5= 20 tab

Morbidity method…

- **CE= C+(C x AU)….** Expected number of tt episodes
  - 3,123,408 + (3,123,408 x 5/100)= **3,279,578**
- **ET=CE X F….**Expected treatment épisode
  - 3,279,578 x 106/1000= 347, 635
  - 3,279,578 x 29/1000= 95,108

Morbidity method…

- **QT=QE X ET X PT….total quantity required**
  - **Under 5**
    - Cotrimoxazole suspension
      - 100 ml x 347, 635 x 1= 34,763,531
    - Paracetamol 120mg/5ml
      - 60 ml x 347, 635 x 1= 20,858,119
    - Pseudoephedrine syrup
      - 50 ml x 347, 635 x 0.8= 13,905,412

Morbidity method…

- **Advantages**
  - Does not require consumption data
  - Can be used for review of drug use and prescribing
  - Can be used for estimating need in new and scaling-up programs or disaster assistance
  - Motivates reliable morbidity recording

Morbidity method…

- **Disadvantages:**
  - Detailed morbidity data and standard treatment schedule may both present difficulty
  - Require detailed calculation
  - Standard treatment may not really be used

3. Proxy/Adjusted/ Consumption Method

- Uses **known** consumption data from one system "**standard**" to estimate the drug needs in a similar or expanded system called **"target"**
  - **Population** based, defining drug use per 1000 population
  - **Service** based, defining drug use per specified patient case/inpatient admission

Proxy consumption…

- **Steps** in quantification using **proxy consumption method;**
- **Step 1**: Select the ***standard system*** for comparison and extrapolation.
- The **standard** and the **target** should **resemble** in terms of;
  - Geography, climate, morbidity pattern
  - Prescribing practice, drug supply status
  - The standard should have an adequate and uninterrupted drug supply, fairly rational prescribing practice, complete and accurate records of patient contact and inventory movement

Proxy consumption…

- **Step 2 :**Develop the **drug list**
  Step 3: Establish the **time period** to be recovered in the review
  Step 4 : Review records from **standard** system to compile contact or population data
  Step 5 Establish denominator for extrapolation
  – E.g consumption either be **thousands** of pt contact or inhabitants in the region

Proxy consumption…

- **Step 6 :** Determine **consumption rate** in the standard system
  – the adjusted annual consumption divided by either no. of thousands of contact or inhabitants
- **Step 7: Extrapolate** the standard system's consumption rate (SCR) to the target system
  – **SCR** (for each drug) X **estimated no. of thousands** of contacts or inhabitants for the target facility
- **Step 8 : Adjust** for expected **losses**
- **Step 9 :** Estimate **costs** for each drug and total costs and make adjustment against the available budget

Proxy consumption…

- **Example:** Estimate **Ampicilline 250mg** required from the standard to the target system based on the following information
  - **Standard** system consumption
    - 50,000 inhabitants
    - 32,500 outpatient
    - 6 month total consumption: 89,000 capsule
    - Out of stock: 34 days
  - **Target**
    - 80,000 inhabitants
    - Unknown outpatient

Proxy consumption…

- **Step 1:** Standard- X
  - **Step 2:** Ampicilline 250mg caps
  - **Step 3**: 6 month
  - **Step 4:** Per thousand inhabitants or per thousand outpatients
  - **Step 5:** SCR
    - **SCR= adjusted annual consumption/no. of thousands of contact or inhabitants**

= (218,617/50,000 inhabitants) x 1000= 4,372 per thousand

Or = (218,617/32,000 out patients) x 1000= 6,727 per thousand

Proxy consumption…

- **Step 6 :** Projected requirement
  – **Extrapolate** SCR to the target system
  – **SCR** X **estimated no. of thousands** of contacts or inhabitants for the target facility
  – 4,372 per thousand x 80,000 inhabitants
  – 349,788 caps ~ 350 **pack**
  – **1** Pack= 24.7
  – Value of proposed order = 8,645USD

4. Service level projection of budget requirements

- Used to measure the financial requirements, not specific medicines for pharmaceutical procurement on the basis of costs per patient treated at various levels of the same health system
- Does not forecast needs for specific medicines, but provides a clear, logical one page justification of pharmaceutical financing requirements

Service level projection of budget requirements…

- **Information needed**
  – **Average** number of curative **outpatient** attendance, non curative attendance and **patient bed days** for **each** type of facility in the source health system
  – The **average cost** per outpatient attendance, per non curative attendance and per bed-day in each type of facility
- **Steps in quantification**
  1. Establish the categories of **facilities** and determine the number in each category (**standard**)

2. Determine the patient contact denominator for each type of facility and compile or estimate the average number of patients contacts of each type at each category of facility

Service level projection…

- **3) Calculate** the **average cost** per **contact**:

  – The total drug purchases for the facility or facilities in class divided by the **attendances** or **bed-days**

  4) Calculate the total projected drug costs

- ***Summary question!!!***

  • *Identify source of data and enumerate the **pros** and **cons** of the above four quantification methods?*

Relative predictive accuracy of quantification methods

- Quantification of pharmaceutical requirements is inherited imprecise b/c of the many variables involved
- Useful result depend as much on "art", or human judgment, as on science
- In many instances, the most precise method for quantifying pharmaceutical usage is the consumption based approach provided that the source data are;
  - Complete
  - Accurate and
  - Properly adjusted for stock out periods & anticipated change in DD and use

Relative predictive accuracy….

- Proxy consumption is generally used if neither the consumption based nor the morbidity is based method is feasible
- Even though target & standard facilities are closely matched quantification estimate are suspect
  - B/C it is a big leap to assume that **disease incidence**, **utilization patterns & prescribing patterns** will be essentially the same in both setting
- Still the method may be the best alternative in the absence of suitable data required consumption and morbidity and useful for cross checking projections made by other methods.

Relative predictive accuracy….

- Service level projection of budget requirements produces a rough estimate of financial needs for pharmaceutical procurement not the quantity of the products
- The method relies on two assumptions :
  - The standard system (used for comparison) & the target system are comparable interns of patient attendances and bed days per faculty AND
  - Patterns of medicine use are roughly the same in both systems
- Despite its limitation, this method is can be useful in predicting medicine costs in a new system or in a system in which no data are readily available

Comparison of quantification methods

Method	Uses	Essential data	Limitations
Consumption	• First choice for procurement quantifications, given reliable data • Most reliable predictor of future consumption	• Reliable inventory records • Records of supplier lead time • Projected pharmaceutical costs	• Must have accurate consumption data • Can perpetuate irrational use
Morbidity	• Estimating need in new and scaling-up programs or disaster assistance • Comparing use with theoretical needs • Developing and justifying budgets	• Data on population and patient attendances • Actual or projected incidence of health problems • Standard treatments (ideal, actual) • Records of supplier lead time • Projected pharmaceutical costs	• Morbidity data not available for all diseases • Standard treatments may not really be used • Accurate attendance difficult to predict
Proxy consumption	• Procurement quantification when other methods unreliable • Comparing use with other supply systems	• Comparison area or system with good per capita data on consumption, patient attendance, service levels, and morbidity • Number of local health facilities by category • Estimates of local user population broken down by age	• Questionable comparability of patient populations, morbidity, and treatment practices
Service-level projection of budget requirements	• Estimating budget needs	• Use by service levels and facility type • Average medicine cost per attendance	• Variable facility use, attendance, treatment patterns, supply system efficiency

Summary question!!!

- *Identify source of data and enumerate the **pros** and **cons** of the above four quantification methods?*

Methods of reconciliation of pharmaceutical budget with demand

- The most common types of reconciliation of pharmaceutical budget with demand includes;
  - VEN analysis
  - ABC analysis
  - Therapeutic category analysis

Methods of reconciliation…

- **VEN analysis**
  - It is an approach in which pharmaceuticals are divided according to their ***health impact*** in to vital, essential and non-essential/normal-use categories.
  - **V: Vital:**
    - Potentially lifesaving, have significant withdrawal effect (making supply mandatory),
    - Are crucial to providing basic health services. mandatory to be available 24 hours of a day, 7 days of a week, and twelve months of a year

Methods of reconciliation…

- **E: Essential**
  - Effective against less severe but nevertheless significant forms of illness, but not absolutely vital to providing basic health services.
  - This pharmaceuticals are mandatory to have at least once a day, or at least once in a week, or at least once in a month or once in a quarter of the year, but not as highly mandatory as vitals
- **N: Nonessential:**
  - Used for minor or self-limiting illnesses

Methods of reconciliation…

- **NB:**
  - Drug ordering and stock monitoring should be directed at vital and essential drugs.
  - Safety stocks should be higher for vital and essential items.
  - VEN should be used to ensure that enough quantities of vital and essential pharmaceuticals are bought first.
  - Only reliable suppliers should be used for vital and essential drugs.

ABC analysis

- ABC analysis is the method for determining and comparing drug cost.
- It identifies three useful tiers for analysis:
  - **Class A items**: highest annual usage (high volume or high cost)
    - Usually accounts for 10-20 percent of items ordered and 70 to 80 percent of funds
  - **Class B items**: moderate annual usage
    - Accounts 10 to 20 percent of items ordered and 15 to 20 percent of funds.
  - **Class C items**: Lowest annual usage
    - Accounts for 60-80 percent of items ordered and 5-10 percent of funds

ABC analysis….

- After ABC analysis, careful evaluation of class A items should be done.
- If pharmaceutical cost is needed to reduced, the focus should be on class A items.
- During procurement, competitive approaches should be used and all possible efforts should be sought to get lower price for such items.

Therapeutic category analysis

- Its applications are the same as those of ABC analysis.
- We should focus on cost-control efforts on the therapeutic categories that show the highest consumption and greatest expenditures.
- In this approach, therapeutic categories having the consecutive highest expenditures are identified and the possible change in therapeutic strategy that might prove to be cost-effective will be looked for

Chapter Summary

- Pharmaceutical quantification is the process of determining the amount of pharmaceutical products needed for the purpose of procurement
- Quantification is important for informing supply chain decisions on product selection, financing, procurement, and delivery.
- Quantification exercise follows three key steps: preparation, forecasting, and supply planning.
- There are four basic methods for estimating pharmaceutical quantities which morbidity method , consumption method, proxy consumption method and, service-level projection of budget requirements.
- VEN and ABC analysis either alone or together are used to reconcile pharmaceutical cost requirement with actual budget.